

Application serial no. 09/995,707
Office Action dated November 17, 2005
Response dated February 16, 2006

Remarks/Arguments

Applicant has amended paragraphs [0043], [0061] and [0063] to conform the reference numerals appearing in the description to the reference numerals of the drawings. No new matter has been added.

Claims 8 and 30 have been amended in response to the Examiner's formality objection at paragraph 1 of the Office Action. The claims have been amended in the manner suggested by the Examiner. Minor corrections are also made to claims 3 and 40.

In response to the double patenting rejection detailed at paragraphs 6 through 8 of the Office Action, Applicant submits herewith a Terminal Disclaimer to obviate a provisional double patenting rejection over a pending second application.

The Examiner rejected claims 1 to 15 and 19 to 36 under 35 U.S.C. 102(e) based on U.S. Patent No. 6,606,666 to Bell.

Applicant respectfully disagrees with the Examiner's interpretation of the teachings of Bell in relation to the claims of the subject application. Applicant respectfully requests the Examiner to reconsider and withdraw the rejection of the claims in view of the following comments.

With respect, Bell simply does not teach the subject matter as claimed. For convenience, claim 1 is reproduced below (emphasis added):

1. A stream **switch fabric** comprising:

at least one *stream queue* that operates to receive and store a plurality of *properly ordered substreams of a data stream* from a producer of the data stream; and
a stream queue controller, coupled to said at least one stream queue, that operates to control outputting of at least a portion of the data within the at least one stream queue to a consumer of the stream queue.

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Without limiting the generality of the foregoing, Bell does not teach:

stream switch fabric comprising:

- i) *at least one stream queue*
- ii) that operates to receive and store a **plurality of properly ordered**

substreams...

as recited in claim 1 of the subject application.

Bell's teachings are limited to an information handling system, such as a microprocessor (See Summary, Col 2, lines 5-6) which controls:

- i) *a buffer*
- ii) that receives, stores and outputs packets.

The cited passage only teaches the storing and outputting of packets, as packets, to and from a buffer, and does not teach what is claimed.

Bell does not teach a stream switch fabric at all. Bell teaches an information handling system, such as a microprocessor (see Summary, Col 2 lines 5-6), for buffer management based on bandwidth and latency constraints. Claim 1 claims a stream switch fabric, for content switching on substream basis, rather than on a packet-by-packet basis as taught by Bell. Bell does not teach a fabric which *switches* on a stream basis. Indeed, the reference does not even mention a fabric, or switching; nor would it, as it is directed to buffer management to prevent buffer under or over flows leading to packet loss.

In Section 3 of the official action, the rejection states that the cited passage teaches the claimed subject matter, in part because packets of an information flow inherently comprising proper order in accordance with clock ticks (bottom of page 2 of the Official Action). This assertion is used as the basis for equating the buffer which stores packets, as taught by Bell, with a stream queue that stores properly ordered substreams, as claimed. This is simply not true. Bell does not teach the storing of properly ordered substreams as claimed. It is well known that packets can be misordered or even lost altogether. Bell does not address this in any way as packets are stored in its buffer in the order they are received. Furthermore, packets can originate from a plurality of senders. Bell

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simply teaches the storing of packets in the buffer, and controls the sending of packets to the buffer, or the output from the buffer, based on bandwidth and latency constraints. Bell teaches the use of a traditional buffer (See column 5, lines 5-6) for its preferred embodiment, and does not describe a buffer that can operate as a stream queue as claimed. Bell does not teach the storing of properly ordered substreams in its buffer as asserted in the rejection. It certainly does not teach the storing of a plurality of properly ordered substreams as claimed.

An example of how a producer of properly ordered substreams pushes properly ordered substreams to corresponding stream queues, according to an embodiment of the present invention, is discussed on page 15 of the application, with reference to figure 6:

“Firstly, the I/O element receives a flow of data packets at step 202. These packets may represent a single segmented data stream from a single sender, many segmented data streams from any senders, or many segmented data streams from a single sender. For example, an I/O element may receive 100 IP packets which represent a single data stream made up of 100 packets, or multiple data streams each made up of fewer than 100 packets.

Next, at step 204, the I/O element reads the flow identifiers of the packets within the flow at step 204. As described above, the flow identifiers include the packets' source layer 3 address, source layer 4 port, destination layer 3 address, destination layer 4 port and a layer 4 identifier (i.e. UDP or TCP etc.). Each flow identifier is unique to a particular data stream. Therefore, the I/O element can group the received data packets based upon the data stream which they are associated with by grouping the packets with identical flow identifiers.

Next, the I/O element terminates the layer 4 protocol for the packets using well-known techniques at step 206. This termination of the layer 4 protocol includes removing packet overhead such as the layer 3 and layer 4 headers from the data, re-ordering the data into the proper order as necessary and requesting retransmission of any packets that are found to be lost or

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delayed beyond a threshold level. The result of the termination of the layer 4 protocol is the reconstitution of data streams or at least portions of the data streams within the I/O element.

Finally, at step 208, the I/O element pushes properly ordered substreams of data bytes to corresponding stream queues. If no stream queue has yet been assigned for a particular received stream, the I/O element preferably goes through an initiation procedure such as that described above with reference to Figure 1. "

Bell teaches a different type of system, for solving a different problem, and hence has a different configuration, than the claimed subject matter. Accordingly, it does not teach the claimed invention, due to the distinctions discussed above. Our argument is not predicated in reading in these teachings from the specification into the claim. Rather, our argument is that Bell does not teach what is claimed, and one can not equate the teachings of Bell with the limitations as claimed, as evidenced by these distinctions.

In view of the forgoing, Applicant respectfully submits that the claim group headed by independent claim 1 is patentably distinct over the teachings of Bell and favourable consideration and disposition of the application in that regard is respectfully requested.

Dependent claims 2-18 are therefore allowable based on the allowability of claim 1. Furthermore, each of these claims introduce additional limitations which further distinguish over the cited art.

For example, claim 4 is clearly not taught by the cited art. Without limiting the generality of the foregoing, the cited art does not teach "*reading a consumer attribute for the stream queue to determine an assigned consumer of the stream queue and triggering outputting of a portion of the data within the stream queue to the assigned consumer.*" The rejection to this claim is improper, and the assertion made, even if true, fails to address the emphasized portion of the claim. Even though Bell does discuss controlling the *rate of output* from the buffer based on the bandwidth and latency constraints of the

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consumer, this does not constitute reading a consumer attribute *for the stream queue*.
Moreover, Bell certainly does not teach **determining an assigned consumer based on said attribute**.

Similar arguments apply, at least to claims 5, 6 and 8.

With respect to the rejection to claim 19, Bell simply does not teach the subject matter as claimed in independent claim 19. Without limiting the generality of the foregoing, claim 19 recites receiving means for "receiving a plurality of properly ordered substreams of a data stream from a producer of a data stream". Applicant submits that this claim element is neither taught nor suggested by Bell as more fully discussed in relation to claim 1. Consequently, applicant submits that the rejection of the claim under 35 U.S.C. 102(e) on the basis of the teachings of Bell in U.S. Patent No. 6,606,666 is unfounded and should be withdrawn. Favourable consideration in that regard is respectfully requested.

Similarly the claim group headed by independent claim 21 and including dependant claims 22 through 34 recites a method having the step of "receiving properly ordered substreams of a data stream" which is a step that is not contemplated by and outside the teachings of Bell. For the reasons described more fully above, Applicant submits that method claim 21 and its dependant claims are patentably distinct from the teachings of Bell and favourable disposition to that effect is respectfully requested.

Favourable consideration is respectfully requested.

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No fee is believed due for this submission. However, Applicant authorizes the Commissioner to debit any required fee from Deposit Account No. 501593, in the name of Borden Ladner Gervais LLP. The Commissioner is further authorized to debit any additional amount required, and to credit any overpayment to the above-noted deposit account.

Respectfully submitted,

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